

FIG. 1

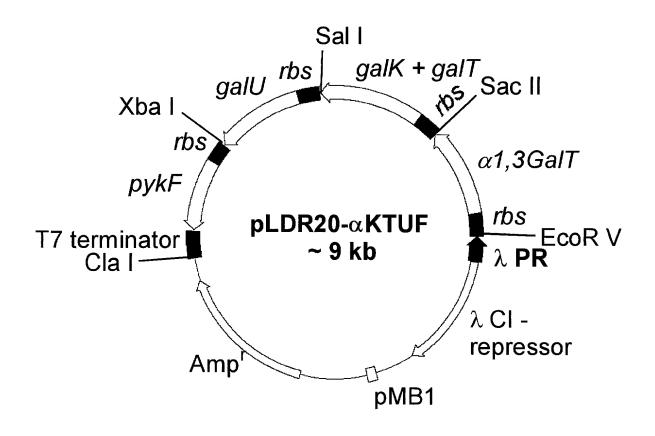
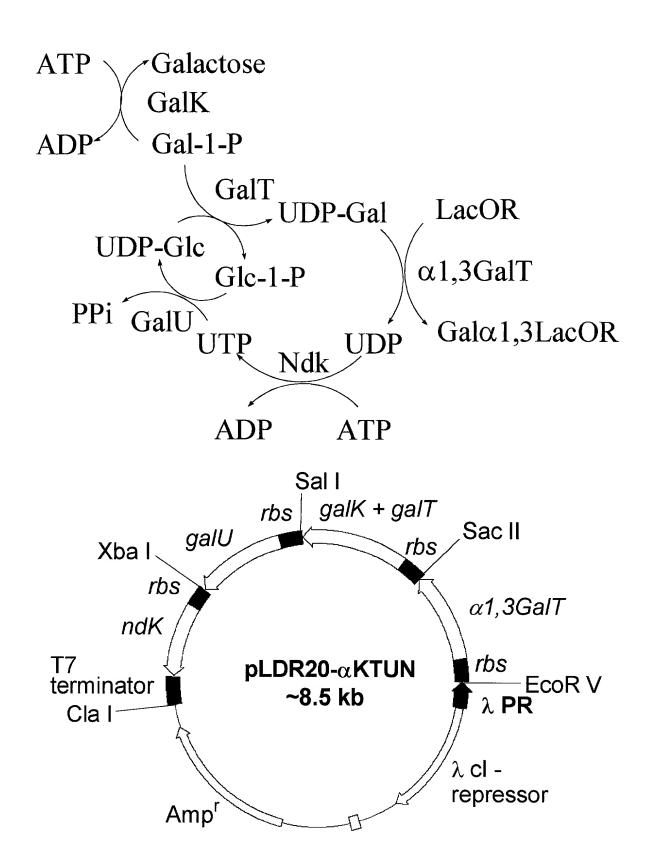
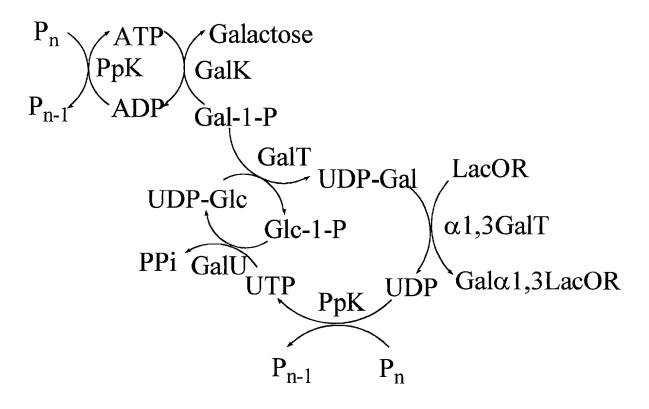
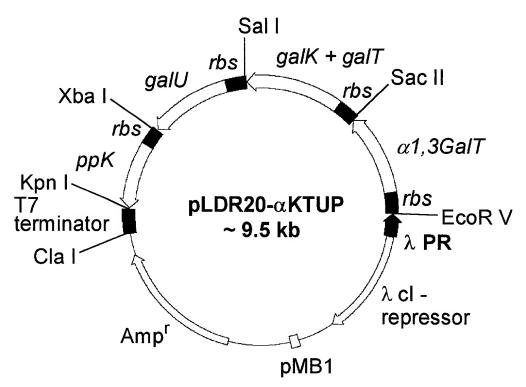
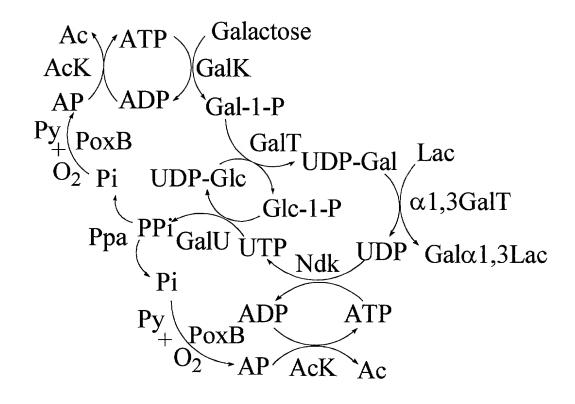


FIG. 2



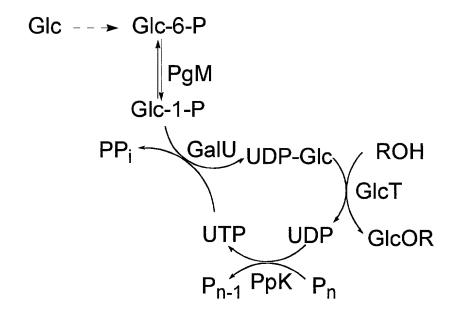






Gal + Lac 
$$\longrightarrow$$
 Gal $\alpha$ 1,3Lac + 2 H<sub>2</sub>O  
2ATP + 2H<sub>2</sub>O  $\longrightarrow$  2ADP + 2HOPO<sub>3</sub><sup>2-</sup>+ 2H<sup>+</sup>  
2ADP + 2CH<sub>3</sub>CO<sub>2</sub>PO<sub>3</sub><sup>2-</sup>+ 2H<sup>+</sup>  $\longrightarrow$  2ATP + 2CH<sub>3</sub>CO<sub>2</sub>H  
2Pyruvate + 2O<sub>2</sub> + 2HOPO<sub>3</sub><sup>2-</sup>  $\longrightarrow$  2 Ace + 2CO<sub>2</sub> + 2H<sub>2</sub>O<sub>2</sub>  
2H<sub>2</sub>O<sub>2</sub>  $\longrightarrow$  2H<sub>2</sub>O + O<sub>2</sub>

## **Balance:**



Glucose +  $2P_n$  + ROH  $\longrightarrow$   $2P_{n-1}$  + GlcOR + PPi

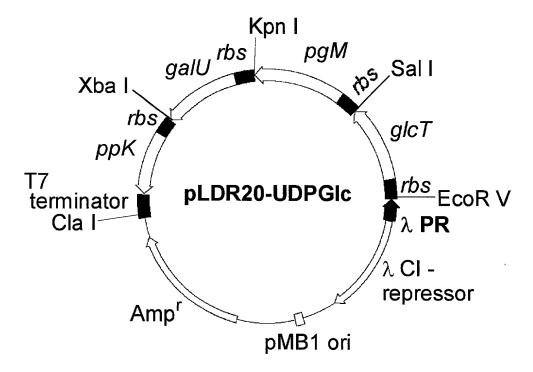
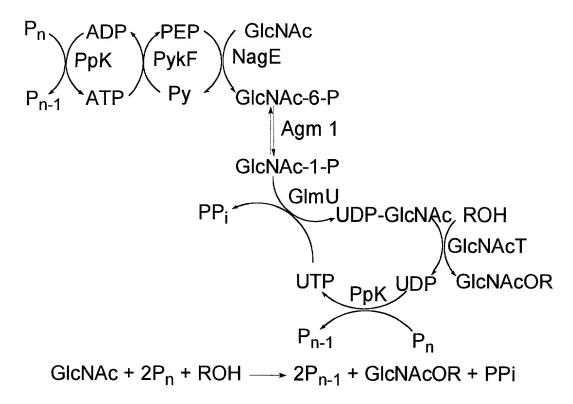
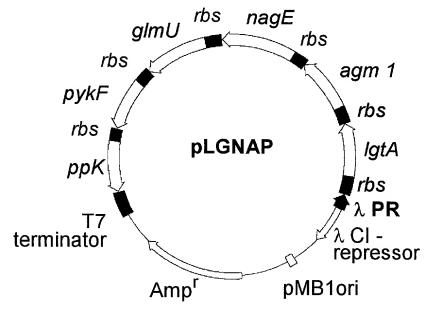
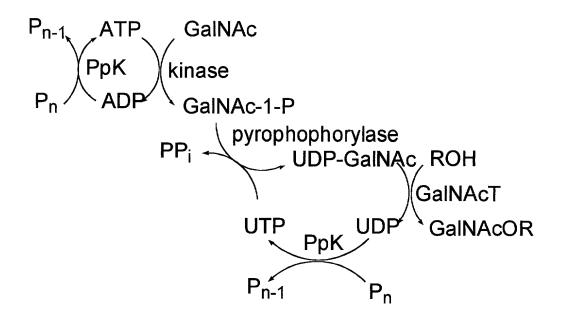
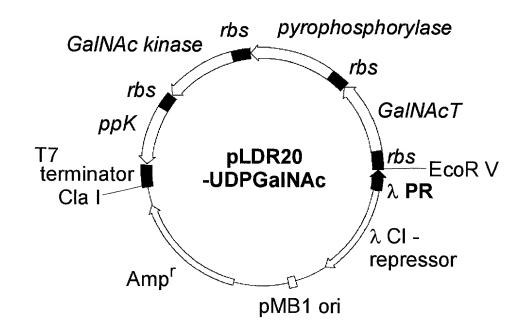


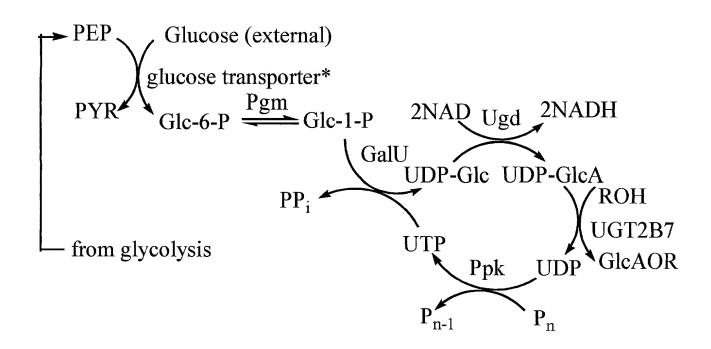
FIG. 6

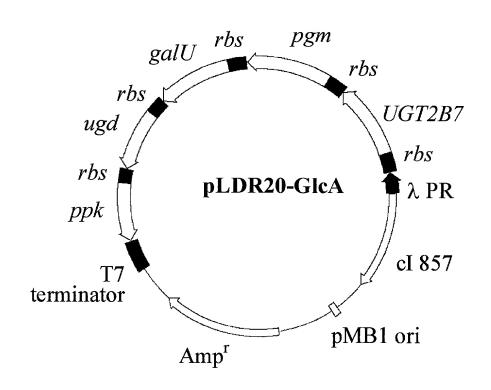


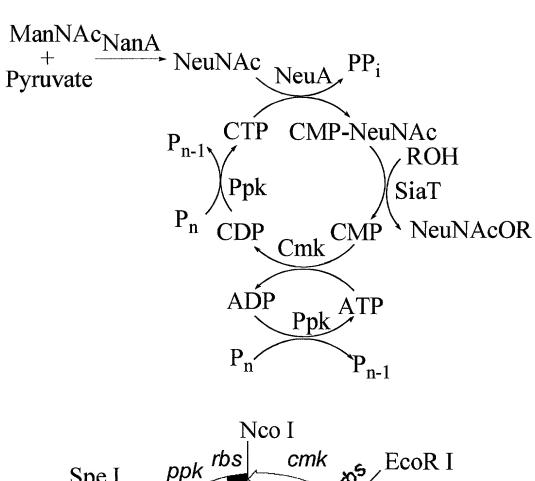


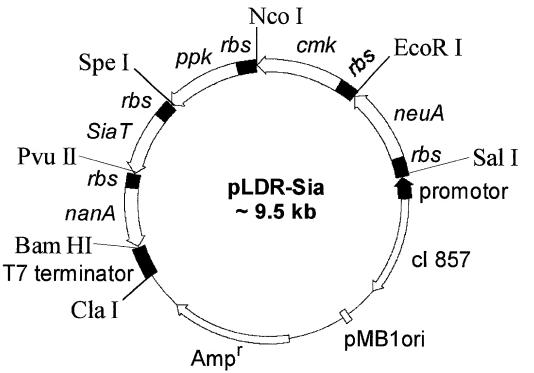


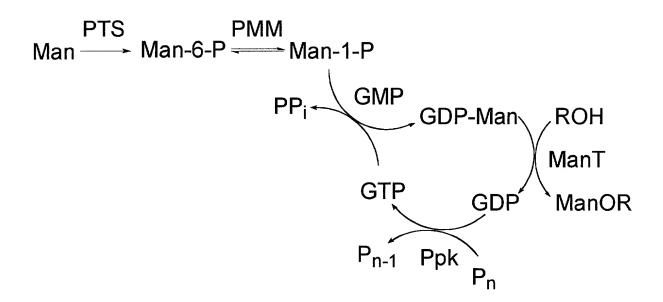












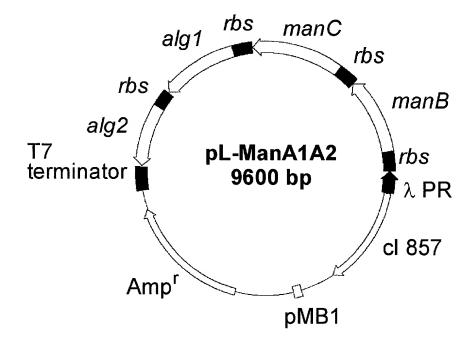
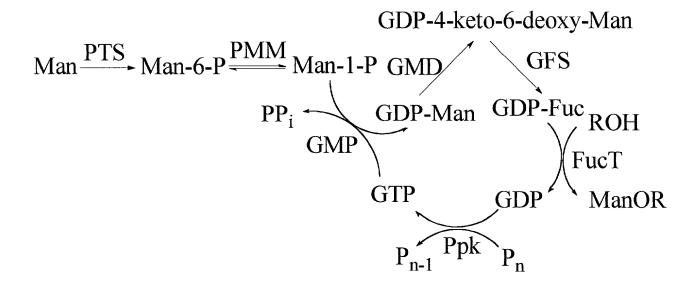
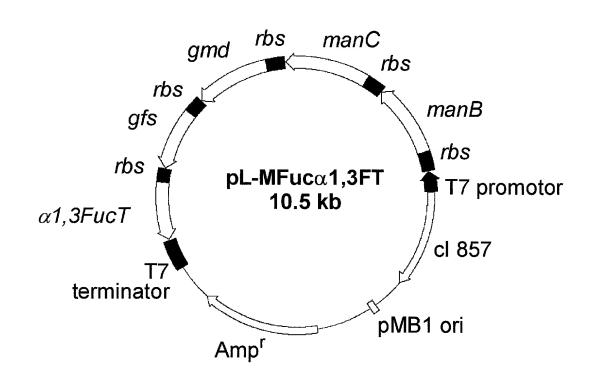
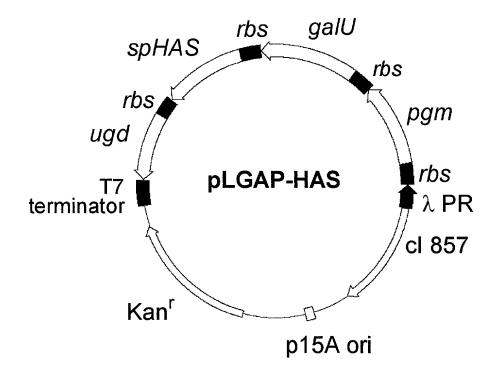


FIG. 11







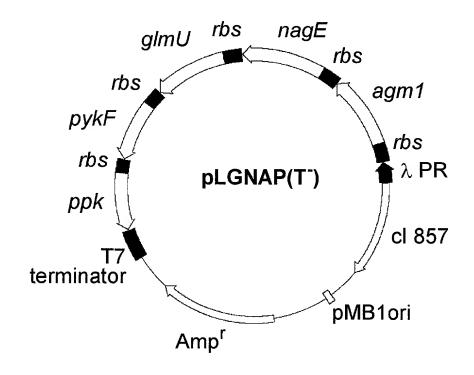


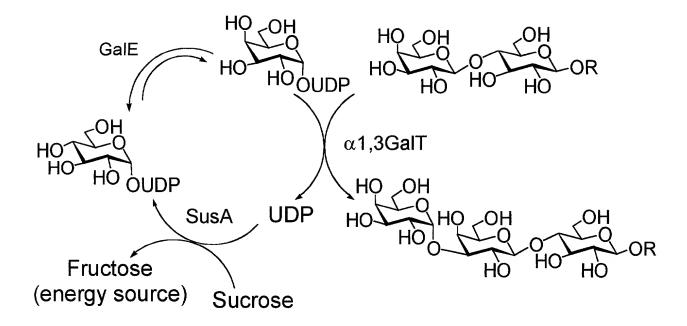
FIG. 13

Neu5Acα2,3Galβ1,4GlcNa

**Target II.** (Human milk) Neu5Acα2,6Galβ1,4GlcNAcβ1,3Galβ1,4Glc

**Target III.** (Human milk)
Neu5Acα2,6Galβ1,3 (NeuAcα2,6)GlcNAcβ1,3Galβ1,4Glc

Target IV. GM3 (Bovine milk) (Neu5Ac $\alpha$ 2,3Gal $\beta$ 1,4Glc-O-Ceramide/Sphingosine



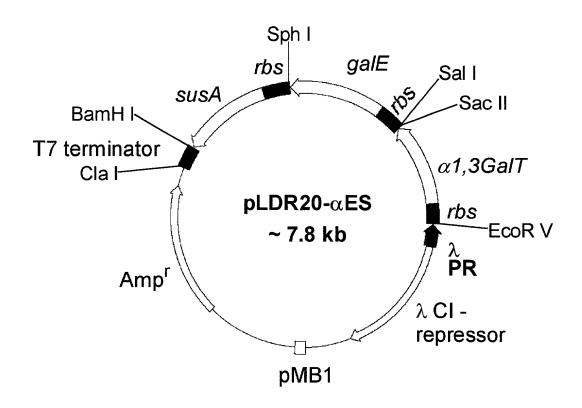


FIG. 15

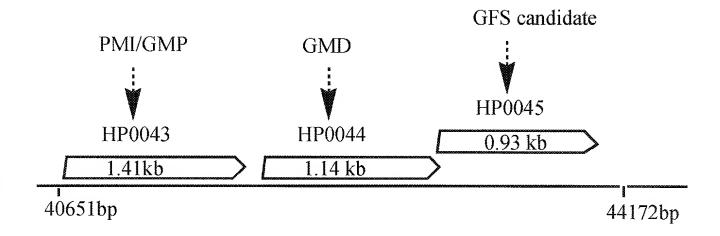


FIG. 16

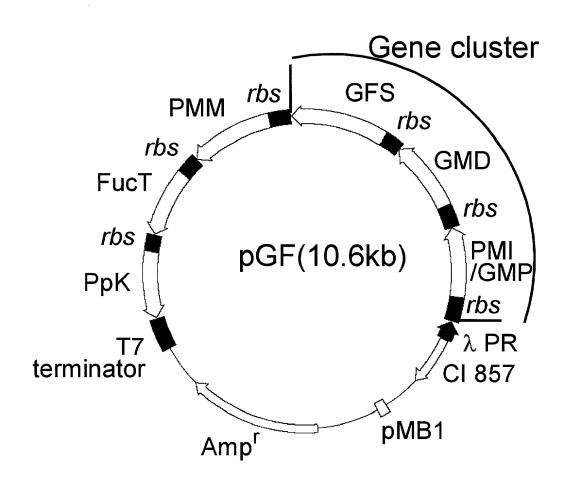
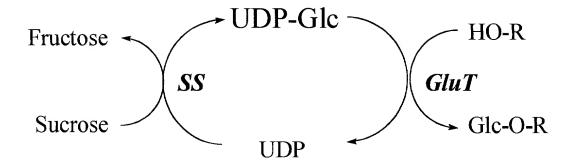


FIG. 17



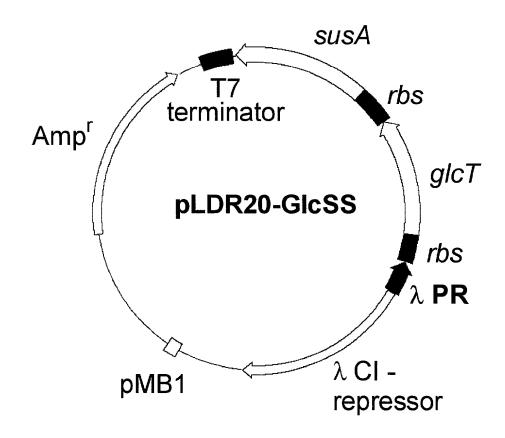
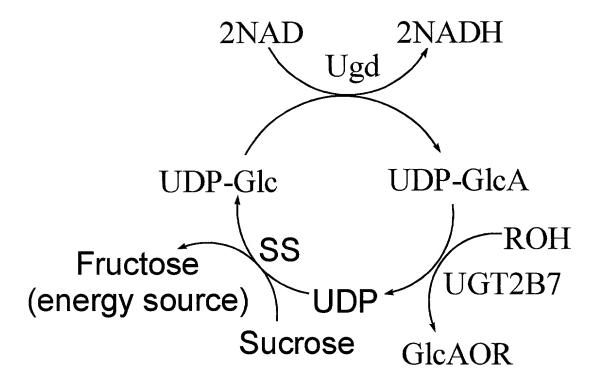
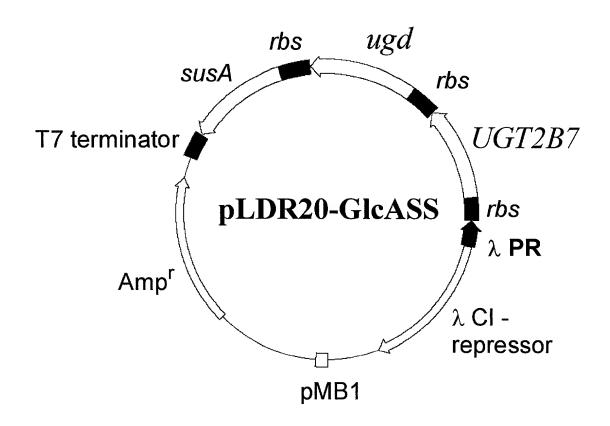
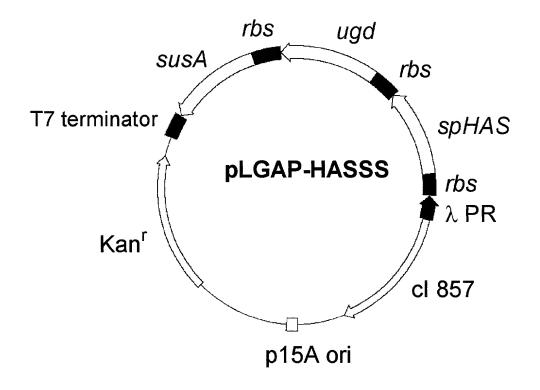


FIG. 18







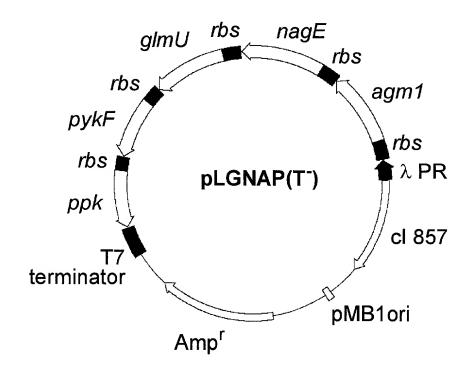
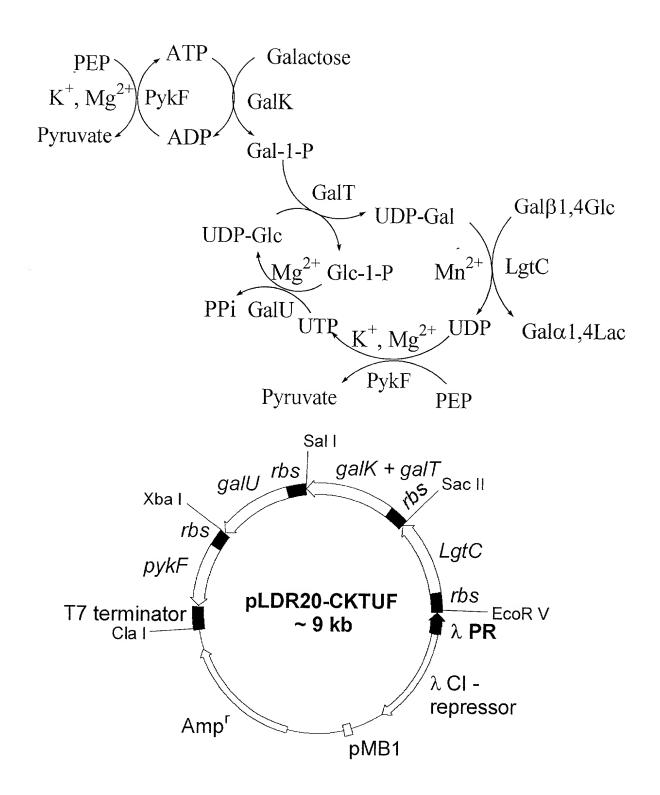
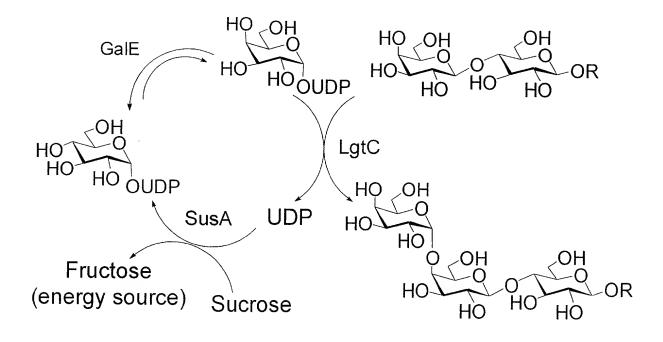


FIG. 20





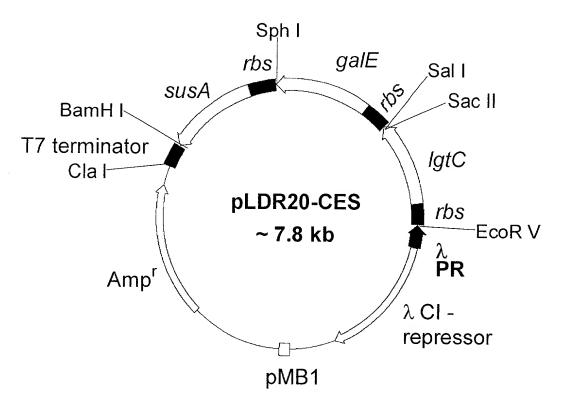


FIG. 22